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Art. XVII.—*On some Palaeozoic Fossils from Deep Creek and Evans' Creek, Saltwater River, Victoria.*

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Introduction.

On the 28th of August, 1856, Chas. D'Oyley Aplin, of Selwyn's first Victorian Geological Survey, made a collection of fossiliferous sandstones and grits from the vicinity of Deep Creek near Diggers' Rest, and from Evans' Creek, north of Sunbury.

Soon after arriving in Melbourne, to take charge of the Palaeontological collection at the National Museum, the writer examined and described (Chapman, 1903, p. 118) the typical *Siphonotretae* of the Upper Ordovician rocks of the higher reaches of the Saltwater River, and whilst incidentally clearing up a discrepancy in the naming of the different parts of the same river, as Deep Creek and the Saltwater River, he studied the samples noted above, that were obtained from the true Deep Creek, determining the fossils (Ba 60) as Silurian and probably Yeringian. The note appended to the paper cited (Chapman, 1903, pp. 78, 79) includes some general determinations of the fossils, a note upon which was promised shortly. The naming of this small collection, which had been shelved for many years through pressure of work at the time, has now been revived by the desire of the present geological surveyor of this area, Mr. David Thomas, B.Sc. The results of the writer's investigations are now recorded, together with a note on the second locality, of Evans' Creek, which seems to represent an horizon recently named as the Riddell Grits.

Description of Survey Specimens, Ba 60.

The Geological Survey reference to the locality of Ba 60 is "W. Bank of Deep Creek with the Saltwater River, Quarter Sheet 7 S.E."

The rock of the Ba 60 locality is a fossiliferous and hardened mudstone, with a conglomeritic structure in parts, and of an ochreous to liver-brown colour. The fossils are chiefly in the condition of moulds and casts, and are abundant but generally poorly preserved.

The fossils here identified are as follows:—

ANTHOZOA.

Lindstroemia conspicua Chapman.

(Chapman, 1925, p. 106, pl. xii., f. 5-7, pl. xv., f. 23.)

Observations.—This present specimen is a faithful cast of the basal end of the cup and some of the lateral wall. It shows the typical number of septa, as recorded for this species. By its general short and stoutly conical form it could not be confused with the other species recorded in the same descriptive paper above noted. *L. conspicua* was described by the writer from the Melbournian of South Yarra and Moonee Ponds Creek, and from the supposed passage bed of Wandong and Glenburnie road, Whittlesea, in the Jutson collection in the National Museum.

Heliolites sp.

The specific relationship of a cast in mudstone is doubtful, but comparison may be made with *H. megastomum* McCoy, in regard to the size of the autopores.

CRINOIDEA.

Stem ossicles are of frequent occurrence. Some measure as much as 14 mm. in diameter; one at least resembles a centrodorsal plate of a form like that seen in the *Cyathocrinidae*. Other smaller stems and ossicles of narrower diameter and less height occur, belonging to other indeterminate genera.

VERMES.

Keilorites cf. crassituba (Chapman).

Solid casts and hollow moulds of the crypts of *Keilorites* occur in the more compact and uniformly textured mudstones. *Keilorites* was formerly referred by the writer to *Trachyderma*, a name now found to be preoccupied by a beetle (*Trachyderma* Latreille 1829, non *Trachyderma* Phillips 1848), as pointed out by R. S. Allan (Allan, 1927, p. 240). *Keilorites* is a common fossil in the Melbournian, and rare in the Yeringian.

Apropos of Dr. Bather's letter in the *Geological Magazine* (Bather, 1927, p. 286), this does not seem to have received a reply from R. S. Allan. The present writer would therefore here suggest that, since he was the original describer of the Australian specimens, he is justified in expressing his opinion that the Australian and the British specimens are congeneric, and that he agrees with Dr. Bather, who has already fixed the genotype as *Trachyderma squamosa* Phillips.

POLYZOA.

Ceramoporella sp.

Quite good casts of the subencrusting zoarium of a cyclostomatous form allied to the above genus, measuring up to 16 x 10 mm., occur here. The comparatively short, trumpet-shaped tubes with oblique apertures afford distinguishing generic characters.

BRACHIOPODA.

? Orthis sp.

Although many fragments of brachiopods are visible, they are so comminuted as to make their determination impossible, beyond the recognition of *? Orthis.*

PELECYPODA.

cf. Edmondia perobliqua Chapman.

Edmondia perobliqua Chapman (1908, p. 18, pl. i., f. 7–9). A cast of a shell with valves united may be referred tentatively to the above species, which was formerly described from fossils found in the Melbournian of South Yarra. The shape of the valves is nearer to *Edmondia* than the described forms of *Nucula,* whilst there is no taxodont dentition present.

GASTEROPODA.

cf. Pleurotomaria.

This is a depressed conical shell having a keeled whorl. The basal surface shows a lirate ornament.

Murchisonia sp.

Several casts of low turreted shells occur, which appear to be more nearly related to the above genus than to *Goniostropha.*

Description of Survey Specimens, Ba 65.

The locality note, forwarded by the Geological Survey of Victoria to Frederick McCoy, then Palaeontologist to the Survey, is as follows:—" Ba 65. Banks of Evans' Creek, about a mile above its junction with Jackson's Creek, Q.S. 7 N.-E., C. D. Aplin, 29.8.56."

The rock containing the fossil remains is a dense, hard, to fairly friable, gritty sandstone containing moulds (impressions) and casts of fossils, often very abundant. These gritty sandstones vary from plum-brown to reddish and ochreous and bluish-grey rocks. They are occasionally seamed with thin quartz veins, and the fossil cavities are frequently lined with an ochreous layer.

Description of the fossils:—

CRINOIDEA.

Crinoids indeterminate. Stem ossicles are common, having narrow columnars, and rounded margin. They appear to be referable to the *Cyathocrinidae*.

CYSTOIDEA.

cf. Caryocrinus.

A negative impression of the exterior of a basal plate occurs here, having a more or less complete hexagonal outline and slightly convex granulose surface. It measures 13 x 10 mm.

VERMES.

Keilorites cf. crassituba (Chapman).

This is represented by a negative cavity of a mud-infilled crypt of irregularly cylindrical and distally tapering contour. The thin transverse partitions seen crossing the cavity are the infillings of the spaces between the original shrunken mud-filled tube.

BRACHIOPODA.

Chonetes melbournensis Chapman.

(Chapman, 1903, p. 74, pl. xi., f. 2–4.)

A cast of a brachial valve occurs in a fine-grained ochreous sandstone. The width of the valve was 6 mm. when complete, and thus of normal dimensions as compared with topotypes from the Melbournian of South Yarra. Another rather doubtful specimen also occurs, in a less sandy matrix, in which the original valve is replaced by an ochreous deposit.

Camarotoechia decemplicata Sowerby.

A sandstone cast of a pedicle valve, sufficiently preserved for identification, is found in the present collection. It is interesting to be able to confirm, in this paper, the identification of the British with the Australian fossils referred to the above species. Having lately investigated the characters of these fossils from the two widely separated localities, the writer has no doubt of their identity as one species. In both the British and the Australian examples, the plications on each side of the mesial fold number from 5 to 7, as originally stated by McCoy in the Prodromus of Palaeontology.

Trematospira liopleura McCoy.

Moulds of the above species were found in the hard sandy ochreous-grey rock. This form appears to have been correctly referred to *Trematospira*, although in none of the Australian specimens do the spiralia seem to have been preserved. The transverse character of the shell, with the divergent crurae and strong septum, show its affinities with the *Athyridae*.

T. liopleura has been recorded from Melbourne (excavations), Moonee Ponds Creek, Wallan Road, Bruce's Creek, Broadford, Whittlesea, and Mt. Disappointment. The main localities are Melbournian, but it also occurs in the passage beds (slightly higher) of Whittlesea.

Rhynchotreta cf. borealis (Schlotheim).

A fairly well-preserved mould of a brachial valve, leaves little doubt that it is referable to *R. borealis*. A typical European Silurian brachiopod ranging from Llandovery to Upper Ludlow. (=Melbournian to Yeringian.)

CEPHALOPODA.

Protobactrites sp.

A cast of the interior of a neat little orthoceracone occurring in the ferruginous grit of Ba 65 may be referred to the above genus. It exhibits the slender cylindrical habit of *Protobactrites*, with few, widely separated chambers. It may be matched, to some extent, with certain undescribed Melbournian species. The incomplete specimen has a length of 6 mm., and a diameter at the proximal end of 2.5 mm. The fragment comprises two complete chambers, and portions of the earlier and later ones.

TRILOBITA.

Encrinurus cf. punctatus Emmrich.

A portion of the furrowed glabella with the punctate free cheeks, occurs in a fractured and seamed cavernous sandstone. The fossil fragment, as usual in this rock, is coated with limonite. The species is common to both the Melbournian (passage beds) and the Yeringian of the Australian Silurian.

cf. Phacops sp.

A portion of the surface of a facetted eye-lobe is here represented in a limonite-coated mould. It may be compared with *Phacops sweeti* Eth. fil. and Mitch., rather than with *Dalmanites meridianus* (Eth. fil. and Mitch.) on account of its flat or complanate surface. *Phacops sweeti* was found at Broadhurst's Creek near Kilmore (probably passage beds between Melbourne and Yeringian).

Summary.

The collective evidence of the suite of fossils from the Geological Survey locality Ba 60 is in favour of a Melbournian age for these fossiliferous sandstones. This conclusion is supported by the presence of such typically older Silurian forms as *Lindstroemia conspicua, Heliolites megastomum, Keilorites* cf. *crassituba,* and cf. *Edmondia perobliqua.* The polyzoan, *Ceramoporella,* introduces an Ordovician element into the facies, but the balance of the evidence is in favour of its Melbournian age. The trilobite referred to in 1903 (Chapman, 1903, p. 79) should be transferred to the locality Ba 65, where *Encrinurus* and *Phacops* occur.

The age of the fossil assemblage from the Geological Survey locality Ba 65 points mainly to a Melbournian age. At the same time there is an upward tendency in the stratigraphical scale as shown by the trilobites. The occurrence of such a restricted Melbournian fossil, however, as *Chonetes melbournensis,* together with *Protobactrites* and *Camarotoechia decemplicata,* supports the idea of a Melbournian age.

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